DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 1.28

WELDING INSPECTION REPORT

Resident Engineer: Siegenthaler, Peter
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-024530
Date Inspected: 23-Jun-2011

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: American Bridge/Fluor Enterprises, a JV

OSM Arrival Time: 700
OSM Departure Time: 1730
Location: Job Site

CWI Name: See Below

Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**CWI Present:**	☑ Yes	☐ No	
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☑ Yes	☐ No	☐ N/A
				Approved WPS:	☑ Yes	☐ No	☐ N/A
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A

Bridge No: 34-0006
Component: Orthotropic Box Girder & Tower

Summary of Items Observed:

At the start of the shift the Quality Assurance Inspector (QAI) traveled to the project site and observed the work and the inspection performed by American Bridge/Fluor Enterprises (AB/F) personnel. The inspection was performed on the various field fit-up of weld joints and the multi-pass fillet welding. The welding was performed utilizing the Shielded Metal Arc Welding (SMAW), Flux Cored Arc Welding (FCAW) and the Submerged Arc Welding (SAW) processes.

A). OBG Field Splice E11/E12

At the request of the QC inspector, William Sherwood, the QAI verified the dimensions in regards to the as built conditions of the planar alignment, root opening and the backing bar placement to the "B" side of the deck plate field splice identified as 11E-12E-A1-A5. At the conclusion of the verification the QAI concurs with QC's assessment and the dimensions were as follows; A1(1) planar misalignment=2.5 mm to 5 mm, Y=0 mm to 240 mm, L=240 mm and (2) planar alignment=3 mm, Y=1350 and L=205 mm. The root opening was measured and noted to be in the range of 14 mm to 20 mm and the backing gaps were measured and were noted as follows; (1)Y=2000 mm, L=50 mm, Gap=3 mm; (2) Y=9110 mm, L=90 mm, Gap=3 mm; (3) Y=9130 mm, L=55 mm, Gap=2.5 mm; (4) Y=15020 mm, L=110 mm, Gap=2.5; (5) Y=25180 mm, L=35 mm and Gap=3 mm. Later in the shift, this QAI was informed by QA Supervisor, William Levell, that the contractor was given approval to proceed with welding of the "A" deck field splice as per Senior SMR, Pat Lowry. At this time the continuous tack welding commence. The welding was performed by Hua Qiang Hwang ID-2930 and Wai Kitlai ID-2953 utilizing the FCAW-G process as per the WPS identified as ABF-WPS-D15-F3200-2, Rev. 0. The WPS was also used by the QC inspector Fred Von Hoff as a reference to monitor the welding and to verify the welding parameters and

appeared to comply with the contract specifications.

The QAI also observed the CJP welding of the bottom plate field splice identified as 11E-12E-D. The welding was performed by welder/operator James Zhen ID-6001utilizing the submerged arc process as per the WPS identified as ABF-WPS-D15-4042B-1, Rev.0. The WPS was also used as a reference by the QC inspector Fred Von Hoff to monitor the production welding and to verify the welding parameters and were noted as follows; 550 amps, 32.5 volts and a travel speed measured at 381 mm/m and the calculated heat input of 2.81kj/mm. The issues were noted at the time of this QAI observation.

B). North Tower Shaft/ Splice Plates

The QAI observed the continued multi-pass fillet welding of the north corner splice plate located at the 114 meter elevation and identified as WN: 165. The welding was performed by Xiao Jian Wan ID-9677 utilizing the FCAW process as per the WPS identified as ABF-WPS-D15-F2200-3, Rev. 0 and F2200-2, Rev. 0. The WPS's were also used by the QC inspector, Steve Jensen, to perform the in process weld inspection utilizing the WPS to monitor the welding and to verify the welding parameters. The welding and the inspection of the splice plates appeared to comply with the contract specifications.

C). Pipe Welding/FW Spencer

The QAI inspector observed the Complete Joint Penetration (CJP) welding of the 4" pipe welds for the pipe system designated as Compressed Air. The welding was performed by Rick Kiikvee utilizing the SMAW process as per the WPS identified as 1-12-1. The welding performed approximately along the gridline identified as W5 at OBG W1. The in process weld inspection performed by the QC inspector, Steve Jensen, appeared to meet the requirements of the contract specifications.

This QA Inspector also performed a daily review and update of the field document control tracking records regarding the Orthotropic Box Girders, Longitudinal and Transverse "A" Deck Stiffeners and Deck Access Holes.

QA Summary

The welding was performed in the flat and overhead positions utilizing the E7018-H4R low hydrogen, E71T-1and EM12K consumables. The 3.2 mm and 4.0 mm electrodes were stored in electrically heated, thermostatically controlled oven after removal from the sealed containers. The exposure limits of the electrodes appeared to comply with the minimum storage oven temperature of 120 degrees Celsius as per the contract documents. The WPS's were also utilized by the QC inspector's as a reference to monitor the welding operation, verify the welding parameters and verify the minimum preheat and the interpass temperatures. The welding parameters and surface temperatures were verified by the QC inspector's utilizing a Fluke 337 clamp meter for the electrical welding parameters and Tempil Heat Indicators for verifying the preheat and interpass temperatures. At the time of the observation no issues were noted by the QAI.

The digital photographs on page 3 of this report illustrate some of the work observed during this scheduled shift.

WELDING INSPECTION REPORT

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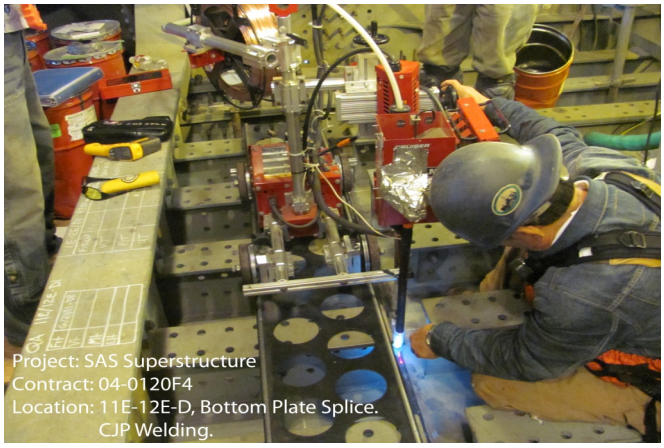

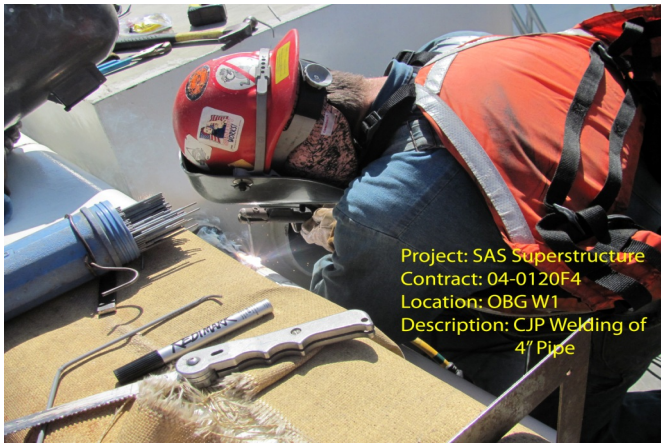

Summary of Conversations:

There were general conversations with Quality Control Lead Inspector, Bonifacio Daquinag, Jr., at the start of the shift regarding the location of welding, inspection and N.D.E. testing personnel scheduled for this shift.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Nina Choy (510) 385-5910, who represents the Office of Structural Materials for your project.

Inspected By:	Reyes,Danny	Quality Assurance Inspector
Reviewed By:	Levell,Bill	QA Reviewer